PHILIP C. ROTH

Curriculum Vitae

Future Technologies Group
Computer Science and Mathematics Division
Oak Ridge National Laboratory
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EDUCATION

Ph.D. in Computer Science, University of Wisconsin-Madison, Madison, WI, 2005. Thesis titled "Scalable On-line Automated Performance Diagnosis," supervised by Prof. Barton P. Miller. Minor in Business. GPA 3.9/4.

M.S. in Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL, 1996. Thesis titled "ETRUSCA: Event Trace Reduction Using Statistical Data Clustering Analysis," supervised by Prof. Daniel A. Reed. GPA 4.9/5.

B.S. in Computer Science and Mathematics with highest distinction, University of Iowa, Iowa City, IA, 1992. GPA 4.0/4.

EXPERIENCE

Research and Development Associate, Future Technologies Group, Oak Ridge National Laboratory, 2004–present. Investigating techniques for petascale tools, performance modeling and simulation.

Research Assistant, Paradyn Project, University of Wisconsin-Madison, 1998–2004. Focused on improving the scalability of automated performance diagnosis. Developed and evaluated the Distributed Performance Consultant, an on-line automated approach for performance diagnosis on thousands of processes. Assisted in development and evaluation of MRNet scalable tool infrastructure.

Software Developer, MCSB Technology (formerly known as Chen Systems Corp.), 1994–1998. Developed UnixWare and Windows system administration tools for award-winning CHEN 1000 server system.

Research Assistant, Pablo Project, University of Illinois at Urbana-Champaign, 1992–1994. Developed method of reducing event trace data volume using statistical data clustering. Developed new user interface components for the Pablo performance tool.

Teaching Assistant, Department of Computer Science, University of Illinois at Urbana-Champaign, 1992. Taught all discussion sections of introductory computer science course for non-technical majors.

Teaching Assistant, Department of Electrical and Computer Engineering, University of Iowa, 1991–1992. Led three lab sessions of a course on hardware device control using assembly language programs.

Undergraduate Research Assistant, ECE Parallel Processing Laboratory, University of Iowa, 1990–1992. Assisted in development of timed Petri net simulation tool.

Undergraduate Research Assistant, Physics Department, University of Iowa, 1988–1990. Assisted in deployment of high energy particle detector. Assisted in deployment of the detector at Fermi National Accelerator Laboratory, Summer 1990.

SELECTED PUBLICATIONS

P.C. Roth and B.P. Miller, "On-line Automated Performance Diagnosis on Thousands of Processes," *Proc. ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP'06)*, New York City, March 2006 (to appear).

J.S. Vetter, N. Bhatia, E.M. Grobelny, and P.C. Roth, "Capturing Petascale Application Characteristics with the Sequoia Toolkit," *Proc. Parallel Computing 2005 (ParCo 2005)*, Málaga, Spain, September 2005.

P. Worley, J. Candy, L. Carrington, K. Huck, T. Kaiser, G. Mahinthakumar, A. Malony, D. Reed, P. Roth, S. Shan, S. Shende, A. Snavely, S. Sreepathi, and Y. Zhang, "Performance Analysis of GYRO: A Tool Evaluation," *Journal of Physics: Conference Series* **16**(2005), pp. 251–255.

J.S. Vetter, S.R. Alam, T.H. Dunigan, Jr., M.R. Fahey, P.C. Roth, and P.H. Worley, "Early Evaluation of the Cray XT3 at ORNL," *Cray User Group 2005 annual technical meeting (CUG 2005)*, Albuquerque, NM, May 2005.

P.C. Roth, D.C. Arnold, and B.P. Miller, "Benchmarking the MRNet Distributed Tool Infrastructure: Lessons Learned," *Proc. High-Performance Grid Computing Workshop*, held in conjunction with the *2004 International Parallel and Distributed Processing Symposium (IPDPS 2004)*, Santa Fe, New Mexico, April 2004.

P.C. Roth, D.C. Arnold, and B.P. Miller, "MRNet: A Software-Based Multicast/Reduction Network for Scalable Tools," *SC 2003*, Phoenix, Arizona, November 2003.

P.C. Roth and B.P. Miller, "Deep Start: A Hybrid Strategy for Automated Performance Problem Searches," *Concurrency and Computation: Practice and Experience* **15**(11–12), R. Feldman and B. Monien (Eds.), September 2003, John Wiley & Sons, Inc., Hoboken, New Jersey, pp. 1027–1046. Also appears in *Proc. Eighth International Euro-Par Conference*, Paderborn, Germany, August 2002; published as *Lecture Notes in Computer Science* **2400**, B. Monien and R. Feldman (Eds.), Springer-Verlag, Heidelberg, August 2002, pp. 86–96.

O.Y. Nickolayev, P.C. Roth, and D.A. Reed, "Real-Time Clustering for Event Trace Reduction," *Third Workshop on Environments and Tools for Parallel Scientific Computing*, Lyon, France, August 1996. Appears in *Intl. Journal of Supercomputing Applications and High Performance Computing* **11**(2), Summer 1997, pp. 144–159.

D.A. Reed, R.A. Aydt, R.J. Noe, P.C. Roth, K.A. Shields, B. Schwartz, and L.F. Tavera, "Scalable Performance Analysis: The Pablo Performance Analysis Environment," *The Scalable Parallel Libraries Conference*, Starkville, MS, October 1993, A. Skjellum and D.S. Reese (Eds.), IEEE Computer Society Press, Los Alamitos, California, pp. 104–113.

SELECTED TALKS

"Performance Evaluation of the Cray XT3," *2006 SIAM Conf. on Parallel Processing for Scientific Computing (PP06)*, San Francisco, February 2006.

"On-line Automated Performance Diagnosis on Thousands of Processors," *2005 Schloss Dagstuhl Workshop on Automated Performance Analysis*, Wadern, Germany, December 2005.

"The Distributed Performance Consultant: On-line Automated Performance Diagnosis on Thousands of Processors," IBM Petascale Tools Strategy Workshop, Yorktown Heights, NY, May 2005.

"Toward Automatic Performance Diagnosis on Thousands of Nodes," *Fifth International APART Workshop*, Phoenix, AZ, November 2003.

"Performance Tools on BlueGene/L," *BlueGene/L Workshop*, Reno, NV, October 2003.

"The Tool Daemon Protocol: Defining the Interface Between Tools and Process Management Systems," *Parallel Tools Consortium 2002 Annual Meeting*, Knoxville, TN, September 2002.

"The Tool Daemon Protocol: Defining the Interface Between Tools and Resource Management Systems," *Fourth International APART Workshop*, Paderborn, Germany, August 2002.

AWARDS AND HONORS

Best Student Paper Award nominee, SC2003.
University of Wisconsin-Madison Graduate Student Council Vilas Travel Fellowship, 2003.
Honorable Mention, National Science Foundation Graduate Fellowship, 1992–1993.
Barry M. Goldwater Scholarship winner, 1990–1992.
University of Iowa Ernest R. Johnson Memorial Prize (awarded to College of Liberal Arts graduates with the highest and second highest GPA), 1992.
National Merit Scholar (sponsored by the University of Iowa), 1988–1992.
Phi Beta Kappa.

PROFESSIONAL ACTIVITIES

Committee Membership:
SC05 Poster Committee

Reviewer (conferences):
31st Annual International Symposium on Computer Architecture (ISCA 2004)
SC 2003
15th Symposium on Computer Architecture and High Performance Computing (SBAC-PAD2003)
12th IEEE International Symposium on High-Performance Distributed Computing (HPDC-12)
9th European PVM/MPI Users' Group Meeting (EuroPVMMPI-2002)
8th International Euro-Par Conference (EuroPar-2002).

Reviewer (journals):
Parallel and Distributed Computing Practices (2001).

Member of IEEE Computer Society, ACM, ACM SIGMETRICS, and ACM SIGOPS.

REFERENCES

Prof. Barton P. Miller
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